

Response Under 37 CFR 1.116
Expedited Procedure
Examining Group 1781

Application No. 10/531,767
Paper Dated: April 11, 2011
In Reply to USPTO Correspondence of November 11, 2010
Attorney Docket No. 0470-051057

REMARKS

This application has been amended. In particular, claim 17 has been amended to further define the components of the hydrophilic core of the granules. Support for this amendment can be found in pages 5-7 of the specification as filed and in original claims 2 and 3. Claim 18 has been cancelled and claims 19 and 31 have been amended to reflect the changes to claim 17. No new matter has been added by these amendments. Claims 17 and 19-31 remain pending. In view of the foregoing amendments and following remarks, Applicants submit that the pending claims are patentable over the cited art of record and the application is in condition for allowance.

Claims 17-31 stand rejected under 35 U.S.C. §103(a) for obviousness over United States Patent No. 6,149,953 to Redding, with the article from Grassas y Aceites by Nassu et al. and PCT Publication No. WO 00/09636 to Duffett cited as evidence. In view of the foregoing amendments, this rejection is respectfully traversed.

Redding is directed to a microcapsule comprising a core that is surrounded by a shell where the shell has seeds embedded therein. (Redding, Abstract.) More specifically, Redding describes microcapsules for use in baking bromate-free yeast-raised bakery products which include a core, preferably composed of sodium chloride, potassium chloride, calcium chloride, choline chloride or combinations thereof, a shell disposed around the core and seeding agents disposed throughout the shell where the seeding agents comprise a soluble acidic compound. (Redding, claim 1.) Suggested materials for the shell component of the Redding microcapsules are disclosed in Table 2 thereof, and include monoglycerides and diglycerides, for example. Table 3 of Redding provides a list of potential seed materials. Ascorbic acid, however, is the primarily seed material discussed throughout Redding. The Examples, for instance, describe the preparation of encapsulated salt particles containing fine flake salt, oil flake and ascorbic acid.

The purported purpose of these seeding agents is to impart enhanced structural and/or functional characteristics to the microcapsules, such as increasing structural integrity,

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enhancing thermal stability, or effecting solubility. (Redding, col. 3, lines 47-59.) Different arrangements of the seeding agents are disclosed in Redding, such as where the seeding agents protrude from the shell (as in Figure 1), are completely imbedded in the shell (as in Figure 2), or are both protruding from and imbedded in the shell (as in Figure 3). (Redding, col. 3, lines 41-46.) However, the common feature of the microcapsules disclosed in Redding is that the shell comprises seeding agents, and the seeding agents are disposed, either partly or completely, within the shell portion of the microcapsule. Redding further teaches that the salt and ascorbic acid-containing microcapsules release the bulk of the salt and ascorbic acid in the early stages of baking (Redding, col. 3, lines 10-12) as this avoids unwanted decomposition of the ascorbic acid (Redding, col. 2, lines 50-56) and unwanted effects of salt on yeast growth and dough rise (Redding, col. 2, lines 58-63).

The present invention is designed to provide an improved lipid-encapsulated functional bakery ingredient, such as an enzyme, that is relatively stable under ambient conditions and which can be released rapidly and in a controlled manner when the functionality is required, especially during proving of the dough. The encapsulation design of the present invention allows the functional bakery ingredient to be protected during storage and transport while also permitting the enzyme to be released early on in the dough preparation process to thereby produce a final product with good consistency and volume.

To that end, claim 17 is directed to a composition comprising granules, where the granules have a hydrophilic core containing an enzyme and a water swellable hygroscopic component. The core is encapsulated by a lipophilic substantially continuous layer. In the granules of claim 17, the controlled release of the enzyme is achieved through the use of a hydrophilic core comprising a water-swellable hygroscopic component and an encapsulating layer consisting essentially of 50-98 wt.% of a triglyceride fat with a slip melting point of at least 30°C and 2-50 wt.% of a release agent selected from monoglycerides, diglycerides, diacetyl tartaric acid ester of mono- and/or diglyceride, stearyl-lactylates and combinations thereof.

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Redding fails to teach or suggest a granule comprising a hydrophilic core that contains an enzyme. In fact, nowhere does Redding suggest encapsulating enzymes at all. The brief mention of “enzymes” in Redding referenced in the Office Action is made only in connection with a discussion of those secondary additives that are generally added to bread. (Redding, col. 2, lines 6-16.) Contrary to what is asserted in the Office Action, Redding does not teach that these secondary additives are encapsulated in the shell material or in the seeds. The materials that are used as the core and seeds are listed in Tables 2 and 3, respectively.

Redding also fails to teach a granule having a water-swellaable hygroscopic component in the core thereof or the specific encapsulating layer defined in the claims, both of which promote the controlled release of the enzyme. Moreover, Redding would not suggest to one skilled in the art to include an enzyme or the swellaable hygroscopic component and encapsulating layer that provide for the controlled release of the enzyme. As clearly described in Redding, the bulk of the salt and ascorbic acid is released in the early stages of baking. (Redding, col. 3, lines 10-12.) In other words, Redding teaches away from a microcapsule that releases an active ingredient contained therein during dough preparation and proofing. Redding would therefore not suggest to one skilled in the art to modify the microcapsule disclosed therein to include the features of the claimed granules which provide this functionality, namely the hydrophilic core comprising the water-swellaable hygroscopic component or the specific encapsulating layer defined in the claims.

Therefore, the claimed invention is not obvious in view of Redding and the rejection of claims 17-31 under 35 U.S.C. §103(a) should be reconsidered and withdrawn.

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CONCLUSION

For the foregoing reasons, Applicants submit that the pending claims are patentable over the cited art of record and are in condition for allowance. Accordingly, reconsideration of the outstanding rejections and allowance of pending claims 17-31 are respectfully requested.

Respectfully submitted,

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